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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/531,461	04/15/2005	Seiichi Kawato	270122US0PCT	7013
22850	7590	05/31/2006	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			PUTTLITZ, KARL J	
			ART UNIT	PAPER NUMBER
			1621	
DATE MAILED: 05/31/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/531,461

Applicant(s)

KAWATO ET AL.

Examiner

Karl J. Puttlitz

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date various.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement filed 7/6/2005 fails to comply with 37 CFR 1.98(a)(1), which requires the following: a column that provides a blank space next to each document to be considered, for the examiner's initials. The information disclosure statement has been placed in the application file, but the information referred to therein has not been considered.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 13-21 and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. patent No. 4,394,299 to Puskas et al. (Puskas).

The rejected claims cover a catalyst for preparation of an α,β -unsaturated carboxylic acid by oxidizing an olefin or α,β -unsaturated aldehyde with molecular oxygen in a liquid phase, comprising a precious metal supported on activated carbon having a specific surface area of 100 m²/g or more and 1300 m²/g or less, or wherein the specific surface area of the activated carbon is 100 m²/g or more and 1000 m²/g or less.

The rejected claims also cover a preparation method of the catalyst for preparation of an α,β -unsaturated carboxylic acid, comprising selecting activated carbon having a specific surface area of 100 m²/g or more and 1300 m²/g or less, or selecting

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activated carbon having a specific surface area of 100 m²/g or more and 1000 m²/g or less and loading the precious metal on the activated carbon.

The rejected claims also cover those embodiments wherein the precious metal is one or more selected from a group consisting of palladium, platinum, rhodium, ruthenium, iridium, gold, silver, and osmium.

The rejected claims cover those embodiments wherein an amount of loading of the precious metal is in a range of 0.1 to 40 wt % with respect to the activated carbon before loading.

The rejected claims also cover those embodiments wherein the claimed catalyst is a catalyst for preparation of acrylic acid from propylene or acrolein, or a catalyst for preparation of methacrylic acid from isobutylene or methacrolein.

At the onset, the examiner notes that those limitations drawn to a use, i.e., a catalyst for preparation of an α,β -unsaturated carboxylic acid, or more specifically, a catalyst for preparation of acrylic acid from propylene or acrolein, or a catalyst for preparation of methacrylic acid from isobutylene or methacrolein, are intended use limitations, and are not given weight under this section. See M.P.E.P. § 2111.02 ("[i]f the body of a claim fully and intrinsically sets forth all of the limitations of the claimed invention, and the preamble merely states, for example, the purpose or intended use of the invention, rather than any distinct definition of any of the claimed invention's limitations, then the preamble is not considered a limitation and is of no significance to claim construction. *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305, 51

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USPQ2d 1161, 1165 (Fed. Cir. 1999). See also *Rowe v. Dror*, 112 F.3d 473, 478, 42 USPQ2d 1550, 1553 (Fed. Cir. 1997)").

With regard to the above embodiments drawn to the claimed catalyst, and its method of preparation, Puskas teaches a catalyst compound prepared by adsorbing palladium on a porous carbonaceous support from a solution of a complex palladium salt formed in the presence of an amine and acetic acid, see for example, description bridging columns 4 and 5. Puskas also teaches that the porous carbonaceous support or substrate is any suitable granular carbon having a surface area of at least 600 m² /g. Activated carbon granules of high surface area prepared from plant, animal or mineral sources can be used. See column 6, lines 4-12. Metal loading is quantitative. See column 5, lines 45-56.

The foregoing anticipates the rejected claims within the meaning of section 102.

Claim Rejections - 35 USC §§ 102, 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 22-25 and 27-30 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Puskas.

The rejected claims cover those preparation embodiments comprising reducing a precious metal compound corresponding to the precious metal to be loaded on the

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activated carbon with a reducing agent in the presence of the activated carbon, specifically, adding the reducing agent to a solution of the precious metal compound in which the activated carbon is dispersed, to reduce the precious metal compound, wherein the precious metal is loaded on the activated carbon, and wherein a concentration of the precious metal compound in the solution is in a range of 0.1 to 20 wt %.

Other claimed embodiments include those wherein the precious metal compound is a chloride, oxide, acetate, nitrate, sulfate, tetra-ammine complex or acetylacetonate complex of the precious metal.

With regard to the above embodiments, Puskas teaches that the catalysts of the instant invention are preferably prepared in two sequential steps: first, the palladium is introduced on the surface of the active carbon, followed by introduction of the rhodium. See description bridging columns 6 and 7. The palladium is added as halide, such as palladium chloride. See column 7, lines 16-25. In addition, the amount of palladium in solution, as described in Example 1 would be well within the range required by the claims (e.g., claims 25 and 30).

Puskas fails to explicitly teach adding the reducing agent to a solution of the precious metal compound in which the activated carbon is dispersed, to reduce the precious metal compound, wherein the precious metal is loaded on the activated carbon, and wherein a concentration of the precious metal compound in the solution is in a range of 0.1 to 20 wt %.

However, Puskas teaches that when sodium tetrachloropalladate or palladium chloride is added to many carbon supports, most of the palladium is immediately deposited as a shiny film of metallic palladium. It has been theorized that the palladium compound is directly reduced to palladium metal by the presence of functional groups, such as aldehydes or free electrons on the carbon surface. See column 2, lines 25-33.

Accordingly, the rejected claims are anticipated since those of ordinary skill would expect that the activated carbon would serve as a reducing agent and reduce the palladium in solution, based on the cited description in Puskas.

Alternatively, a reduction of palladium by activated carbon would have been prima facie obvious since Puskas teaches that the palladium compound is directly reduced to palladium metal by the presence of functional groups on the carbon surface, and therefore, the recited process steps are invariably present in the process of Puskas.

Accordingly, the rejected claims are anticipated, or rendered prima facie obvious by Puskas, since this reference teaches or suggests the elements of the rejected claims.

Claims 31 and 32 rejected under 35 U.S.C. 103(a) as being unpatentable over WO 02/083299 to CELANESE INTERNATIONAL CORPORATION (WO 299) in view of Puskas.

The rejected claims are drawn to a preparation method of an α,β -unsaturated carboxylic acid, comprising oxidizing an olefin or α,β -unsaturated aldehyde with molecular oxygen in a liquid phase in the presence of the catalyst for preparation of an

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α,β -unsaturated carboxylic acid according to the instant invention, namely, those supported on activated carbon having a specific surface area of $100 \text{ m}^2/\text{g}$ or more and $1300 \text{ m}^2/\text{g}$ or less, or $100 \text{ m}^2/\text{g}$ or more and $1000 \text{ m}^2/\text{g}$ or less.

With regard to the above embodiments, WO 299, in example 4, teaches oxidation of isobutylene in the liquid phase with a palladium catalyst. WO 299 also teaches that the prior art contemplates the use of supported catalysts for the reaction, such as those supported on carbon. See page 7.

WO 299 fails to teach activated carbon having a specific surface area of $100 \text{ m}^2/\text{g}$ or more and $1300 \text{ m}^2/\text{g}$ or less, or $100 \text{ m}^2/\text{g}$ or more and $1000 \text{ m}^2/\text{g}$ or less, However, it is for this proposition that the examiner joins Fuskas. In this regard, Fuskas teaches that the porous carbonaceous support or substrate is any suitable granular carbon having a surface area of at least $600 \text{ m}^2/\text{g}$. Activated carbon granules of high surface area prepared from plant, animal or mineral sources can be used. See column 6, lines 4-12. Therefore, those of ordinary skill would have been motivated to modify the disclosure of WO 299 to include activated carbon supports with the required surface area since Fuskas teaches that using these supports is routine in the catalytic art, and effective. Therefore, claims 31 and 32 are prima facie obvious in view of WO 299 and Fuskas since the combination of these references teach or suggests the elements of the rejected claims with a reasonable expectation of success.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karl J. Puttlitz whose telephone number is (571) 272-0645. The examiner can normally be reached on Monday to Friday from 9 a.m. to 5 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thurman K. Page, can be reached at telephone number (571) 272-0602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Karl J. Puttlitz
Assistant Examiner